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CITATION:

SAKANASHI, Kenta. LAND USE PATTERNS FOR CACAO AGROFORESTRY IN SOUTHERN CAMEROON. African Study Monographs 2011, 32(4): 135-155

ISSUE DATE:

2011-10

URL:

<https://doi.org/10.14989/151328>

RIGHT:

## LAND USE PATTERNS FOR CACAO AGROFORESTRY IN SOUTHERN CAMEROON

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**ABSTRACT** Deforestation in central Africa is a serious global concern. Many studies have pointed to timber extraction and agricultural expansion as responsible for the destruction. To address this problem, cacao agroforestry, which combines cacao production with forest conservation, has attracted attention. Recent discussion on cacao agroforestry has focused on biodiversity conservation. Agroforestry was originally promoted to manage and use land effectively. This study examines various land uses by the Fang who are small-scale farmers that engage in cacao production in southern Cameroon.

The Fang use their land not only for agriculture but also for hunting and gathering activities. These forest-based activities support their cacao production by preventing damage caused by animals and by providing forest products to be used as gifts and compensation to obtain labor. The Fang's land use for cacao production is also influenced by local context, history, economy, and politics. Cacao agroforestry by the Fang is advanced through such activities that are seemingly extraneous to cacao production. This study furthers the framework of agroforestry by investigating the local people's overall land use.

**Key Words:** Small-scale farmers; Multi-subsistence activities; Land use; Local context; Central Africa.

### INTRODUCTION

#### I. Purpose

The purpose of this study is to investigate land use and changes in cultivators in central Africa through a case study of the Fang, who are Bantu farmers in southern Cameroon. The author first explains why the Fang land use merits examination.

One important reason is the increasing number of people encouraging forest preservation. Deforestation is recognized as a major environmental challenge in most tropical regions. Reportedly,  $5.8 \pm 1.4$  million ha of humid tropical forest were lost each year between 1990 and 1997 (Achard et al., 2002). Many researchers have pointed out that timber extraction and agricultural expansion have contributed to deforestation, accounting for almost 20% of the total CO<sub>2</sub> emission. Thus, governments in tropical areas and some international organizations are taking aggressive action to address the problem. To preserve forest areas, national parks have been established and resultant regulations have affected the local people's activities in the forest. Local agriculture, the so-called slash-and-burn agriculture has been regarded as a major factor in deforestation. But cultivators require land in order to continue practicing agriculture. In addition, cash crop production is

very important for the economic development of local people in many tropical areas, and this leads to the expansion of cultivated land. Such opposing demands for forest conservation and for cultivation have given rise to many conflicts between the government policy and the livelihood of local people.

Many studies suggest that the practice of agroforestry will help mitigate this problem. Agroforestry is defined as “the combination of forest trees with crops, or with domestic animals, or both” (Combe, 1982). It may promote the increase in, or sustainability of agricultural yield, while at the same time protect forests. Today, the debate on agroforestry is preoccupied with forest preservation and biodiversity.

Particularly in tropical areas cacao production tends to be chosen for biodiversity conservation (Asare, 2006). However, Ghana and Côte d’Ivoire, two main cacao producers, for example, have suffered deforestation.<sup>(1)</sup> On the other hand, cacao production in southern Cameroon is highly-evaluated for its concern for biodiversity conservation. International aid agencies and chocolate companies use southern Cameroon as an ideal model, and assist Cameroon and other tropical countries to promote cacao-based agroforestry such as in southern Cameroon. Asare (2006) noted that:

“Sustainable Tree Crop Programme” (STCP) based in IITA,<sup>(2)</sup> was launched in May 2000, with the support of USAID and the chocolate industries of Europe and America, to promote cocoa agroforests in West and Central Africa (Sonwa et al., 2003). In this new programme, the shaded cocoa agroforests of Southern Cameroon were seen as a sustainable model that can be promoted elsewhere in the sub region where cocoa cultivation is contributing to forest habitat destruction (Asare, 2006: 5–6).

Cacao production in southern Cameroon has been referred to as an ideal example by researchers (Sonwa et al., 2001). As a result, there is a trend that sees agroforestry as a panacea for ecological destruction. Especially, discussions of cacao agroforestry assume that cacao is naturally produced as they focus unduly on environmental conservation. However, such discussions ignore the processes that involve cultivating and maintaining cacao fields, the effect of actual land use by local people’s other activities, the internal and international economy, and the local history.

This study examines the relationship between cacao production and local people’s land use and to factor in these external effects to understand agroforestry in southern Cameroon. The global positioning system (GPS) was used to analyze the local land use. Interview research was conducted to consider the historical and economic context. Through this research, the author attempts to holistically elucidate the local people’s land use and provide a broader perspective to consider cacao agroforestry.

## II. Introduction to Agroforestry and Land Use

The development of agroforestry began with an examination of agroforestry systems in tropical regions focusing on land use and management. The practice of agroforestry, an intimate combination of cultivation of tree species and agricultural crops, has been observed worldwide. It has been practiced mainly in tropical areas such as those in South America, Asia, and Africa. According to King (1987), agroforestry has been used as a system of land management. Colonial governments promoted the system to sustain artificial forests through land management.<sup>(3)</sup> Before the 1970s, this system did not focus on agricultural outputs; instead, it was designed and implemented solely for forest industry (King, 1987: 5). Learning of this situation, Robert McNamara, the President of the World Bank from 1968–1981, emphasized the problem of the rural poor. McNamara spoke of “the now general acceptance of agroforestry as a system of land management that is applicable both in the farm and in the forest” (King, 1987). The World Bank promoted various social forestry programs to support agriculture and enhance rural welfare in accordance with its president’s assertion. These efforts were designed to assist small-scale farmers by increasing food production and to conserve the environment (King, 1987).

The Food and Agriculture Organization (FAO) of the United Nations also followed this trend, as indicated by the theme of the past three World Forestry Congresses: “The role of forestry in the changing world economy” (1966), “Forests and socio-economic development” (1972), and “Forests for people” (1978) with a special session on “Forestry for Rural Communities.”

In addition, the International Development Research Centre (IDRC) established a project for identifying tropical forestry research priorities.<sup>(4)</sup> The IDRC commissioned John Bene, a Canadian forester, to undertake a study to identify significant gaps in world forestry research and training, assess the interdependence between forestry and agriculture in low-income tropical countries to propose research leading to the optimization of land use, formulate forestry research programs that may yield considerable economic and social results to developing countries, recommend institutional arrangements to conduct such research effectively and expeditiously, and prepare a plan of action to obtain international donor support (King, 1987). Bene’s team concluded that it was important to combine production systems that integrate forestry, agriculture, and/or animal husbandry to optimize tropical land use. He recommended conducting research in agroforestry and establishing an internationally financed organization that would manage agroforestry research. As a result, the International Council for Research in Agroforestry (ICRAF) was formed in 1977.<sup>(5)</sup> The ICRAF strongly influences the generation of knowledge, as well as the promotion and practice of agroforestry science through the study of agroforestry, and publishes the journal called *Agroforestry Systems*. Lundgren, the director for the ICRAF, emphasized that the ICRAF promotes enhancing interdisciplinary capacity and methodology to assess land-use system constraints and potential of agroforestry in the first issue of *Agroforestry Systems* (Lundgren, 1982).

While the discussion of agroforestry focused on land use in the 1970s and

the 1980s as described above, agroforestry was also expected to lead to social integration.

Although shifting cultivation can reach a durable equilibrium under ideal conditions, it is obvious that huge surfaces have been deteriorated by migrating farmers, unable to maintain the fallow long enough. Their annual crops give them the possibility to move to other places and to colonize new lands, according to their needs. Agroforestry, which introduces perennial plants into their production, may contribute to the social integration of these populations and will maintain them on lands which produce both: food for subsistence and cash-crops. More than 200 million people actually live as nomads on roughly 300 million hectares of forest and it becomes increasingly urgent to show them more stable cultivation methods (Combe, 1982: 22).

Agroforestry encourages people who live in forest regions to settle and practice agriculture. Thus, agroforestry in tropical areas has focused on agriculture and agricultural land use. Local people are assumed to build their permanent homes and continue to practice only agriculture in a certain place. In recent years, arguments about people's land use in agroforestry have receded under this premise, as agroforestry has become recognized as a strategy for biodiversity conservation. A special issue of the journal *Biodiversity and Conservation* (2007) featured articles about biodiversity conservation in cacao production through case studies in Latin America, Africa and Asia. In the special issue, Schroth & Harvey (2007) observed that it was important to explore the factors which make cacao agroforestry effectively contribute to conservation while sustaining the increase in world chocolate consumption and human population growth in cacao production regions. Thus, the attention on production and conservation in agroforestry has overshadowed its original goal of social integration, that is, to encourage the local people to settle in a fixed location for agriculture, and the impact of people's other activities and the economic and historical context of their land use.

## AGROFORESTRY IN SOUTHERN CAMEROON

### I. Research Area

The research was mainly carried out in villages Z in Dja et Lobo Prefecture in South Province, Cameroon (Fig. 1). The area is located approximately 370 km from Yaoundé, the capital of Cameroon. Chujo (1989) recorded the mean annual rainfall in this area to be between 1,600 mm and 1,700 mm. The vegetation is mixed semi-deciduous and evergreen forests. There are four seasons in the research area. The major dry season is from mid-December to March, the minor rainy season is from April to June, the minor dry season is from July to August, and the major rainy season is from September to November.

The Dja Reserve, rich in wildlife and bountiful forests, was established in 1982. Biodiversity in the area has gained international attention, and local people's

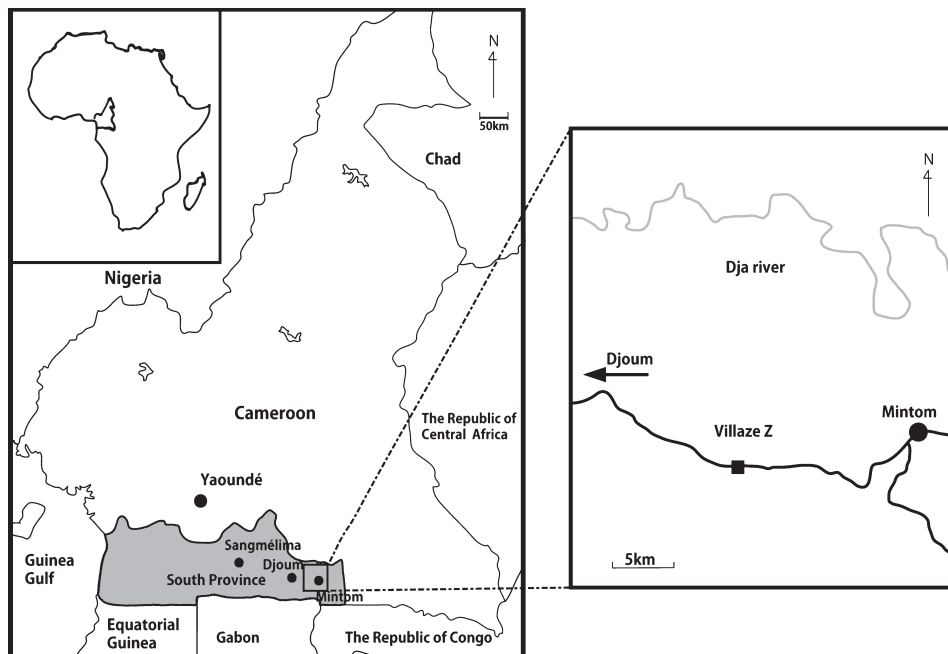


Fig. 1. Research area.

activities are restricted to preserve the forest and the wild animals. The Fang are one of the local peoples inhabiting this area.<sup>(6)</sup> Their small residential units of 10–20 households typically moved, practicing slash-and-burn agriculture in the forest (Joseph, 1977). The Fang have also carried out frequent hunting and gathering (Bennett, 1898). In considering their land use, research must focus not just on agriculture but also on hunting and gathering activities.

The distance between two villages in the research area is particularly large, and the number of households<sup>(7)</sup> is small. Village population decreases drastically from September to June when many children leave their villages to go to school in the city.<sup>(8)</sup>

## II. Economic Activities of the Fang

### 1. *Slash-and-Burn Agriculture*

Slash-and-burn agriculture is one of the most important activities for the Fang, because these fields yield most of the staple crops that they consume. The Fang clear and burn forests during the major dry season. At the beginning of the minor rainy season, from April to June, they begin to plant crops such as cassava, plantain, maize, peanuts, and cocoyam. They harvest maize and peanuts from June to July, cassava from September to October of the same year, and begin to harvest plantain from March to April of the following year. In addition, some households cut new fields before the major rainy season, so that they may harvest crops throughout the year.

## 2. Cacao Production

Cacao production occurs in three stages: (1) initial maintenance of the field, (2) taking care of young trees, and (3) harvest. Before harvesting cacao, in July and August, the Fang weed the fields. In addition, they control the fields by chasing off wild animals that damage the fruit.

Approximately 60% of the households in the research area grow cacao. Selling cacao is the main income source for them. From cacao, they obtain more than 60% of their annual cash income (Sakanashi, 2009).

## 3. Hunting and Gathering

Hunting is carried out throughout the year. Two hunting methods are employed in the research area: steel-wire traps and shotgun hunting. Traps are placed near or around the fields that produce food crops and also deep in the forest. The former are used mainly to prevent crop damage by animals, and the latter are used to obtain a larger quantity of meat. Many Fang set traps around their fields or in the forest. They need to examine traps two or three times per week because the game is often eaten by other animals if it is not recovered quickly.

Hunting with a shotgun makes it possible for the Fang to obtain a greater variety of animals than hunting with a trap. Thirteen of 38 Fang households in the research area have shotguns. Table 1 shows the characteristics of trap and shotgun hunting. As expected, shotgun hunting enabled people to hunt more animals than trap hunting. Many people who do not have a shotgun want to own one or try to borrow one from others.

The Fang have two ways of selling bush meat. One is to directly sell fresh meat. They can sell such meat for about 1,000–4,000 CFA francs (CFAF, 1 euro = 655.957 CFAF) per head depending on the species and weight. The other way is to sell cooked meat cut into small pieces (100–300 g), each costing 100–200 CFAF.

The Fang use various wild plants and their products to eat and make tools. In this paper, the author gives an example of gathering palm wine. This activity is frequently carried out in this area and is intimately connected with their land use, as will be explained later. To gather palm wine, the Fang cut oil palm trees (*Elaeis guineensis*) and dispose the pinnate compound leaf. After one or two days, they attach a bucket to gather sap from the top of the trunk. The sap turns into palm wine by natural fermentation after 1–2 days. The Fang can harvest 1–3 liters of wine each time they gather sap from a palm tree. Sap production continues for 3–4 weeks, and most Fang gather the sap twice a day.

**Table 1.** Success rates of trap and shotgun hunting

	Trap*	Shotgun**
Rate	0.65	1.59

\* N = 129 tours

\*\* N = 166 tours

Rate = game/hunt tour.

### III. Sustainability of the Cacao Production

Cacao yield in Cameroon is smaller than that in Ghana and Côte d'Ivoire but stable (Fig. 2). The yields of Cameroon and Côte d'Ivoire were almost the same amount in 1960, but today Côte d'Ivoire yields approximately eight times more than Cameroon. The government of Côte d'Ivoire was more eager to accept migrants from other countries to increase the cacao yield. The Cameroonian government seldom accepted migrants, as discussed later. Thus, cacao production in Cameroon has been conducted mainly by local people, in other words, by small-scale cultivators (Ecker, 1996).

Cacao production in southern Cameroon has not been greatly affected by cacao price fluctuations. For example, according to a study by Ndoye & Kaimowitz (2000), the increase or decrease in cacao fields remained almost constant despite a decline in the price of cacao after a government-initiated structural adjustment. Cacao yield in Cameroon also did not increase after the cacao price increased as a result of the 2002 civil war in Côte d'Ivoire.

The Fang plant cacao among other agricultural crops they cultivate in the slash-and-burn fields. Ruf & Zadi (1998) pointed out that cacao was produced under heavy shade in agroforests in southern Cameroon. In the research area, cacao is often planted near plantains, which provide shade. Thus, some plantain fields become cacao fields after the plantains are harvested. In the field, the Fang can grow not only cacao and plantain but also tree crops such as avocado (*Persea americana*), citron (*Citrus* sp.), and oil palm (*Elaeis guineensis*). The presence of older plantains indicates that a field used to be an agricultural area. When the Fang cut plantain fields, a number of trees are also left in the area. This is also reported in another area of Cameroon. Shikata (2007) reported 115 varieties of trees in a 0.63 ha cacao plantation. The average is 84 species/ha.<sup>(9)</sup> In the research area, most cacao fields continue to produce for approximately 50 years, which means they were planted two or three generations ago. As cacao fields are

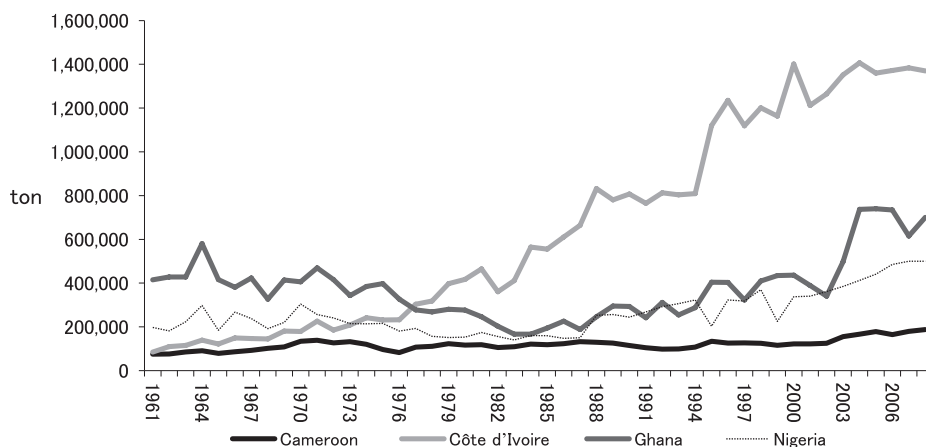


Fig. 2. Cacao production in the major producing countries.

Source: FAO STAT. <http://faostat.fao.org/default.aspx> (Accessed on December 23, 2010)



sustainable for such a long period, cacao fields in southern Cameroon are often said to combine sustainable agriculture in the production of cash crops and foods with forest conservation. These characteristics of cacao production may serve as a model for cacao-based agroforestry, which is promoted in other cacao-producing areas, as Asare (2006) properly notes.

## FANG'S CUSTOMARY LAND USE

### I. Land Use Concepts

The basic unit of land use among the Fang is a household. Each Fang family, a group of households united by blood ties, has its own territory. They believe that their territories expand deep into the forest, and they recognize each other's territory. Each territory generally expands behind their houses and around their fields. In each territory, the Fang divide the forest into the primary forest, called *afan*, and the secondary forest or fallow land, called *ekolo*.<sup>(10)</sup> They have a right under customary law to cultivate fields and preferentially use forest resources in both *afan* and *ekolo* in their territory. Many people collect forest resources, such as fuel wood, wild plants, and fruits, in their territory and may often pass through other territories to engage in hunting and gathering. However, they cannot generally establish agricultural fields in the territories of other households.

The territories including cacao fields are generally inherited from the father or paternal uncle in the patrilineal Fang society. The Fang inherit cacao fields even if they live away from the area at one time, as illustrated by the following cases.

#### Case 1

Fang A (aged 50, male) once worked in Douala, the largest city in Cameroon. He inherited his father's cacao field. However, he continued to work in the city for several more years. His family and the Baka who lived in the neighborhood of the inherited land maintained his field for him. Finally, Fang A lost his job in town in the second half of the 1980s. He returned to the village, and started to produce cacao himself.

#### Case 2

Fang B (aged 38, male) was a taxi driver for 15 years in Yaoundé. He inherited his uncle's cacao field during his stay in the city. He returned to his village some years after the death of a financial patron. His cacao field had not been carefully maintained for several years, and was densely covered with secondary forest. Fang B began to clear the forest and prepared the field in order to cultivate cacao.

#### Case 3

Fang C (aged 50, male), works as an officer of the Cameroon Postal Services (CAMPOST) in Yaoundé. He obtained land for a house and a field in his home

village in southern Cameroon. He gathered many people from the village and other areas, and built a huge two-story building and a cacao field. The field was more than 5 ha, considerably larger than the average size of a field belonging to the villagers in the area. Because he usually lives in Yaoundé, his relatives manage his house and cacao field.

People from a different area also can obtain a part of the land when the head of family accepts their request.

#### Case 4

A Bulu man, D (aged 50, male), lived near Sangmélíma. He was a carpenter. He met Fang A and was invited to Fang A's village in southern Cameroon. The two men knew each other because they once worked together in the 1980s. D went to the village and stayed for one year maintaining Fang A's house, repairing a room and a roof. D helped not only A but also other villagers to be able to stay in the village longer. D mentioned that the forest in this area was richer and produced more bush meat than his area near Sangmélíma. He expected Fang A to give him a part of his land for cacao production.

Whether or not D can eventually obtain the right under customary law to make a cacao field depends on the negotiation and relationship with the head of family.

## II. Shifting Fields and Cacao Fields

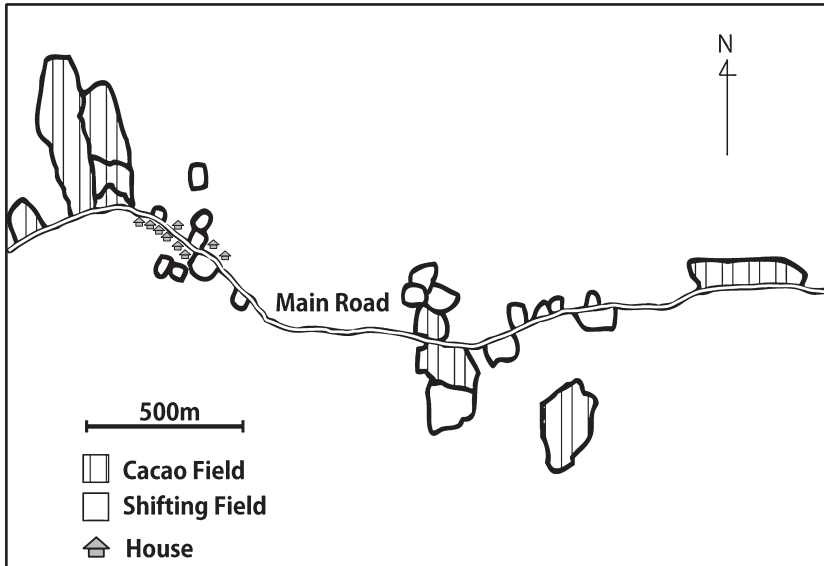
Shifting fields for food crops are often turned into cacao fields. The Fang also burn fields near the cacao field in order to expand the field after harvesting the food crops. Thus, slash-and-burn agriculture and cacao production are linked in terms of land use.

Fig. 3 shows a map illustrating the Fang fields in village Z. The Fang generally prefer to establish fields near houses and along the main roads, although many other spaces are widely available. Because the Fang construct their houses along the main roads, they can easily reach their fields. However, this preference often causes trouble among villagers, as shown in the following case.

#### Case 5

Fang E (aged 20, male) established a field and wanted to turn it into a cacao field in the future. However, it was situated on land bordering his land and that of Fang F (aged 20, male). They had a heated argument after E finished clearing the field. Their respective parents witnessed it and reaffirmed the border by setting posts as a landmark to calm E and F. The result of the argument was that E was allowed to harvest crops for only one year, but could not plant cacao because cacao continuously produces for several decades, and would thus lead to the permanent occupation of F's land.

This case shows that the Fang do not always establish cacao fields in land over which customary law gives them ownership under customary law, even if



**Fig. 3.** Map of village Z.  
Source: Drawn using GPS.

abundant land is available for agriculture. The location of new and old cacao fields is very important to the local people, because the cacao harvest and the land use continue for several decades.

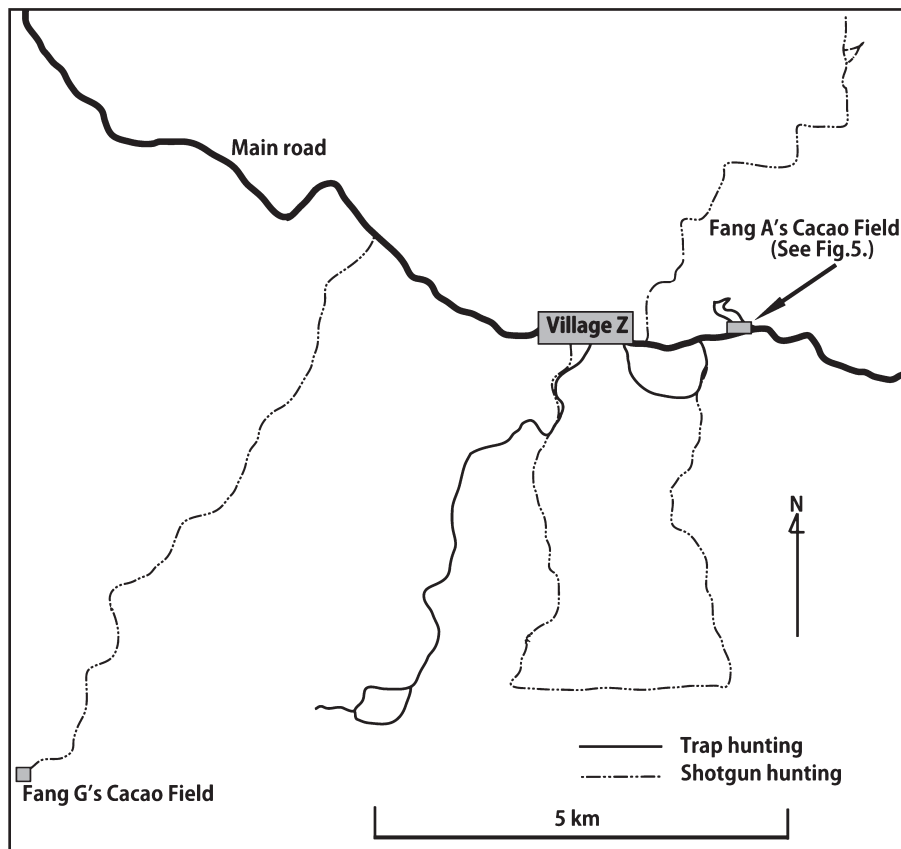
### III. Hunting and Cacao Field

Hunting helps to keep out wild animals that come to eat cacao. Also, bush meat is used as compensation for cacao harvest work and is sold for cash to support household finance during other seasons when cacao is not harvested.

Fig. 4 shows each trap and shotgun hunting route used by some Fang in village Z. Fig. 4 does not show the characteristic distances of the traps. The distance of traps from the village depends on a Fang hunter's strategy. For example, it depends on the time required to examine the traps in each hunting ground, and whether a shotgun is also used. The distance covered by shotgun hunting correlates with the number of animals hunted and the number of shells that can be used.

Traps are often set around the fields to prevent damage caused by animals. Fig. 5 indicates trap placement around Fang A's cacao field. As shown in the figure, people set traps and carry out shotgun hunting behind the cacao field. This illustrates the double purpose of these activities: preventing crop damage caused by animals and acquiring bush meat in the bountiful forest beyond the fields. Cacao production in southern Cameroon is highly evaluated for agroforestry, and damage caused by animals is an important concern in sustaining this system, because the fields are near the forest.

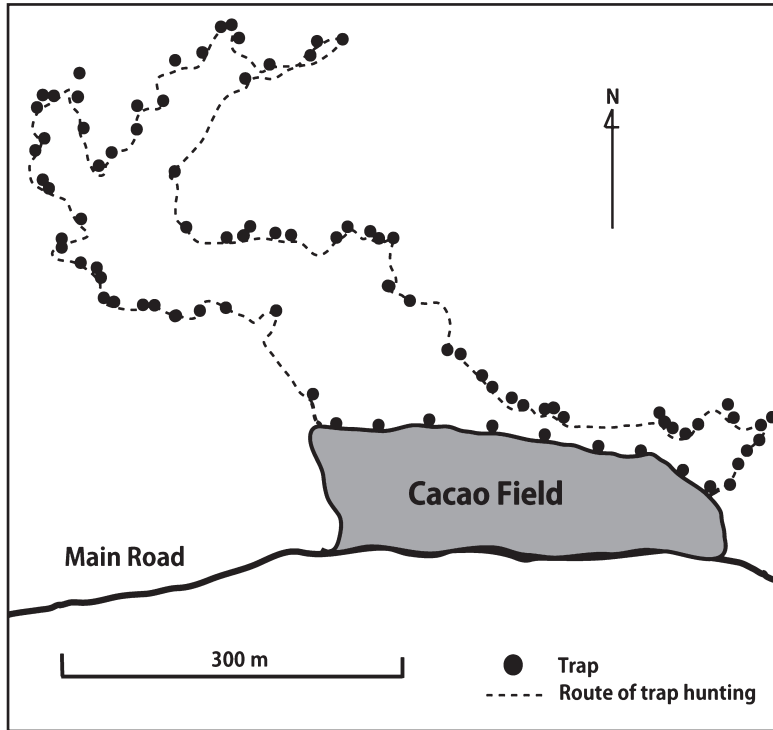
Hunting is often carried out in a Fang's own cacao fields. Some of the Fang protect their fields with a shotgun by shooting small monkeys that damage the



**Fig. 4.** Routes of trap and shotgun hunting used by some Fang.  
Source: Drawn using GPS.

crops. The Fang often go to the cacao field at night to hunt if they need bush meat, because it is easy to find animals using a flashlight at night. In short, the cacao field can become a hunting field. The cacao field can also become a hunting base. Some cacao fields in the research area are far from villages. One of these was cultivated before settlement began along the main roads around the 1930s through the 1940s. As a result, the fields were surrounded by forests after the settlements were established. Fang G's cacao field in Fig. 4 is a good example.

Fang G is too old to harvest and transport cacao by himself to his house, but wants to continue to produce cacao in his field, because he inherited the field from his father and then expanded the area. Moreover, he believes that the soil in his field is more fertile than in the land around the village. He has a special attachment to the field. To continue growing cacao, he asks some Baka pygmies to help harvest the cacao from his field in exchange for half of the earnings from the cacao harvest. The Baka helpers make small houses, set traps, and live in the field during the cacao harvest season. Some other Fang men want to hunt more animals by themselves, and there are those who ask other Baka to hunt bush meat for them. All

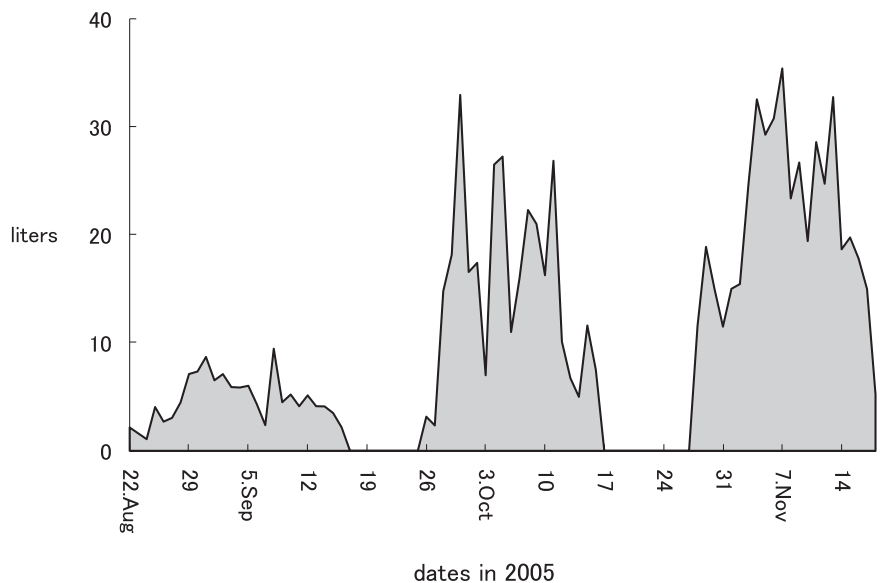


**Fig. 5.** Traps around Fang A's cacao field.  
Source: Drawn using GPS.

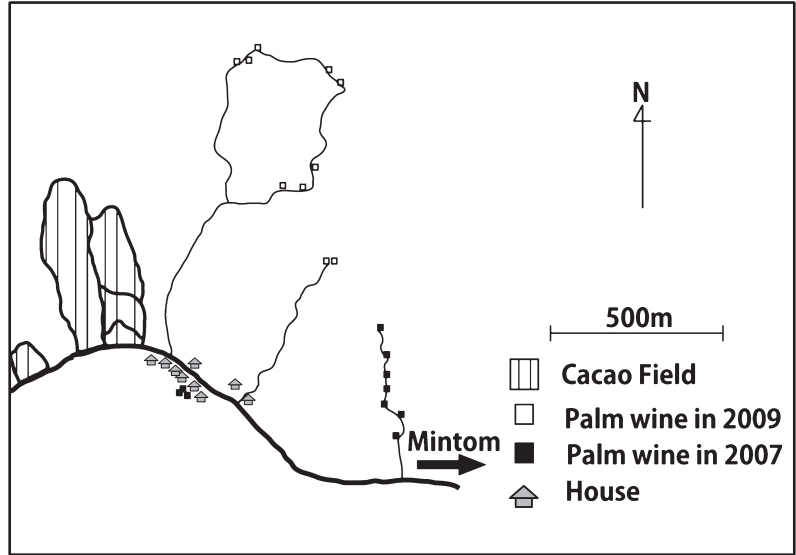
these people often come to stay in Fang G's field, and use it as a base for hunting over an extended area. Thus, Fang G's persistent efforts to maintain his cacao field enable others to continue hunting in the area surrounding his field.

#### IV. Gathering Activities and the Forests

Gathering palm wine, one of the important gathering activities, also influences cacao production. Palm wine is rich in vitamins and minerals, and provides some food energy.<sup>(11)</sup> The Fang harvest the ripened nuts to produce cooking oil, and then they cut the trees to gather palm wine. The Fang prefer to drink the wine during work breaks and after work. The Fang often cut more palm trees than are necessary for the wine they consume, in order to provide it to the people who help during the cacao harvest. For this, they distil the palm wine and sell it, because they can obtain more money than otherwise selling predistilled palm wine. The demand for distilled palm wine increases during the cacao harvest season. Fig. 6 shows two peaks in production over three months of palm wine gathering. During these periods, the cacao harvesting work is extremely laborious. A Fang farmer cuts 5–6 oil palm trees in order to drink palm wine himself and provides it as compensation to the workers for their hard work. Thus, palm wine is necessary for hard work, such as that required during the cacao harvest.



**Fig. 6.** Quantity of palm wine gathered by a fang.



**Fig. 7.** Distribution map of palm wine gathered by a household.  
Source: Drawn using GPS.

Fig. 7 is the distribution map of palm wine gathered by a Fang household during cacao harvest season in 2007 and 2009. It shows that oil palm trees grow abundantly not only in the fields but also in the secondary forests. The Fang do not intentionally plant oil palms, which grow in a state of the so-called semi-domestication. The Fang basically own all oil palm trees in their own territory. When the Fang burn fields and cultivate cacao fields, they always leave oil palms

without cutting them down. The Fang have a strategy for efficiently using palm wine and calculating how many trees they should cut for extracting wine. They check and identify suitable oil palm trees for gathering palm wine when they pass through the forests and fields in their own territory. Therefore, they know very well the location of the oil palm trees to be cut for extracting palm wine. Gathering palm wine is thus linked with cacao production and hunting as well in terms of Fang land use.

## FACTORS INFLUENCING FANG LAND USE

### I. Historical Background

One of the factors influencing land use by the Fang in southern Cameroon is their small population, which has its roots in the colonial period. In the Ntem, Kuribi, and Dja et Lobo Regions where the Fang and the Bulu live, the population density is less than one-tenth of the Sanaga Region, which the Beti people densely inhabit (Joseph, 1977). Even now, the population density in South Province (11.02/km<sup>2</sup>)<sup>(12)</sup> is lower than those in Central Province (35.26/km<sup>2</sup>) and South-West Province (47.54/km<sup>2</sup>) (Ministry of Economy and Finances, Republic of Cameroon, 2001).

There are few migrant workers in the cacao fields in the research area, although it is one of the production centers of cacao in Cameroon. This is the result of historical events. Cameroon was governed by Germany from 1884 to 1916. During the German regime, many Europeans established plantations in the northwest region, around Mt. Cameroon. They needed more labor to manage their plantations, thus many local people were mobilized, including those living in southern Cameroon far from the western region. Then, Cameroon was divided into French and British territories under the mandate of the League of Nations after World War I, and became a United Nations Trusteeship after World War II. Thus, labor migration from Nigeria and the northwest province to southern Cameroon were constrained by national boundaries and difference in the official language, as English was used in the west while French was used in the south and east.

This situation was different from that of Côte d'Ivoire in the Afrique Occidentale Française (AOF) at the time. In the AOF, worker migration and trade in agricultural products were encouraged. Many migrants came to Côte d'Ivoire to work in cacao fields. As a result, Côte d'Ivoire is presently the largest producer of cacao, although the cacao yields in Cameroon and Côte d'Ivoire were almost similar in 1960 (Fig. 2). After independence in the 1970s, laborers in Cameroon migrated from rural areas to cities, where the government supported oil-related industry, and the increasing opportunities for employment attracted people (Losch, 1995). Thus, heavy deforestation that has been marked in Ghana and Côte d'Ivoire has not occurred in rural southern Cameroon, where there is chronic population shortage. As a result, considerable forest-covered land exists today and is used by the Fang in their customary way.

## II. Economic Factors

Economic factors influence land use and cacao production. For example, the people's economic situation affects the decision to cultivate a cacao field. Many of the Fang cannot afford to buy commercial cacao nursery seedlings, that cost around 100 CFAF each in town, because they must spend most of their money on their children's school fees and debt repayment after the cacao harvest season. Thus, the Fang search for young cacao seedlings in their cacao fields and attempt to transplant them to the new field, but the number of seedlings the Fang can find in the fields is not enough to populate a cacao field. Cacao agroforestry in southern Cameroon is not easily expanded nor established without sufficient capital.

Economic factors are also associated with the mobility of the people. Many Fang have worked in towns and cities in other parts of Cameroon, depending on their economic situation and life stages. For example, many young people who have less money want to go to towns and cities to earn more. They often reside in towns even if they inherit cacao fields from their fathers and uncles. While they work in town, they neglect the cacao fields, The fields may turn into secondary forest if they are not weeded and maintained. However, some of these younger people return to their home village, for example, at the time of economic crisis or when their parents pass away, and begin cacao production by themselves, as illustrated by Case 1 and Case 2 above.

These cases illustrate that economic factors sometimes prompt people to move, and this affected land use in the village. For example, the time when Fang A in Case 1 returned to the village corresponds to a period of structural adjustment in Cameroon in the late 1980s. At that time, many people lost their jobs in towns or cities and returned to their villages for food. Sunderlin et al. (2000) described rural population growth, a shift from the production of cacao and coffee to field crops, and the resulting deforestation, concluding that one cause was the structural adjustment policy. However, since the initial population of the research area was small, overall land has not been shifted to agricultural land. In addition, the tendency of people today to move from their village to towns is accelerating again in the area. For example, many young people go to the city and stay for a long time to earn money or go to school. Thus, a large amount of land has been left forested and not turned into agricultural fields. On the other hand, this situation leads to in-migration from other parts of the country, as shown in Case 3 and Case 4.

A considerable number of people, some from another part of the southern area and others from the Anglophone area in western Cameroon, also come to the Fang area to ask for work during the cacao harvest season. In addition, richer people who live in cities and towns come to the villages in southern Cameroon to ask the village head to use land for larger cacao fields. These villages are likely to have been the rich men's home village or adjacent to their home village. Some wealthy people try to obtain land to practice agriculture and obtain food or money, even if they are not from the village. Land in southern Cameroon may become investment properties for the outsiders. Such investment affects the local people's land use, because these fields are larger than an average field in the village.



### III. Impact of National Policy

The Land Tenure Law in Cameroon was enacted in 1974. It followed the French colonial concept that defined all lands “vacant and without master” as state land (Burunham, 2000). This concept does not regard secondary forests as agricultural land. The World Bank was pressured by environmentally concerned nongovernmental organizations (NGOs) in the late 1980s to give priority to the environment. Thus, it asked the Cameroonian government to establish a new national forestry law that included restrictions on timber exports, development of forest management plans, and creation of community forests. The new Forestry Law was enacted in 1994. Although the law reinforced the concept of the 1974 Land Tenure Law assigning large areas to the Permanent Forest Estate fundamentally earmarked for commercial logging, it aimed to establish a community forest for rural people to ensure their rights to commercially exploit forest resources in their neighborhood (Burunham, 2000).

In accordance with the Forestry Law, the Ministère de la Forêt et de la Faune au Cameroun (MINFOF) asked each village in Dja et Lobo Prefecture to establish a 5 ha community forest to share the forest resource and income from timber among the villagers in 2006. Each household had to provide one person's labor to cut trees and establish the boundary under the direction of a MINFOF agent. The agent told them that the Cameroon government would pay wages, but the villagers have not received them yet. Moreover, the community forest has not been used for local people since it was established. However, the law may confine the local people's activity associated with forest resources to the community forest. The law also restricts local people's hunting activity. For example, all hunting activities, hunting methods, hunting periods, and sales of game meat are restricted (Joiris, 1998). Bush meat is necessary for the Fang livelihood. In the research area, it is difficult to earn sufficient money without selling cacao or bush meat. In addition, hunting bush meat helps the Fang to procure labor or minimize the damage caused by animals, as previously mentioned. Thus, the restrictions on local activities could possibly affect not only the land use for hunting but also agricultural land use.

Recently, a rumor regarding planned road construction from south Cameroon to the Republic of Congo has been disseminating in the research area.<sup>(13)</sup> Some village people hope that the government will pay a large amount of compensation money if their cacao fields are disrupted by the road construction work. Because of the principle that land “vacant and without master” is defined as state land, the Cameroonian government can implement this plan at any time if sufficient money and labor force are available. Thus, the Fang continue to use their land critical for survival even as the possibility looms of the government action that would affect them.

### DISCUSSION

This study had two purposes. Briefly, one was to describe the land use of

small-scale Fang farmers in Cameroon in central Africa, and the other was to reevaluate factors that support cacao agroforestry.

This study particularly focused on Fang land use, the relationship between cacao production, and other activities. The Fang have practiced cacao production for more than 50 years under heavy shade in southern Cameroon, and it is very important for the livelihood of most Fang. However, the Fang cannot maintain their way of cacao production without practicing other activities. Shifting fields are necessary for establishing and expanding the cacao fields. The shade provided by plantains in the fields is beneficial for young cacao trees. In addition, the Fang cannot easily establish cacao fields because of their customary law and their priority of securing land for food production.

Fang hunting and gathering activities are also closely related to land use for cacao production. Hunting supports cacao production by minimizing damage caused by animals. Bush meat and palm wine play an important role in obtaining outside labor for the cacao harvest season. Thus, these activities indirectly support cacao production. The total area of land used by the Fang, including that used for these activities, is larger than the area of the agricultural land. In other words, to practice cacao production in southern Cameroon, the Fang must use a larger area for hunting and gathering activities. The hunting and gathering sustain their agriculture. Owing to customary law as well as the historical and economic contexts, described above, vast expanses of land are “unused” in southern Cameroon. Many local people moved to the cities or towns, and immigrants were few in the region under the colonial government. Thus, dense forests exist in southern Cameroon today. On the other hand, these forests have attracted the attention of other non-farmers who live in towns and cities or of the Cameroonian government. These outsiders come to establish cacao fields. The Cameroonian government protects the forest and the wild animals with the support of international organizations and NGOs. However, they still tend to assume that land “vacant and without master” is defined as state land. However, this “vacant” area is used by the local people for agriculture, hunting animals and gathering wild plants.

Considering these points, this author focuses on the issue concerning cacao agroforestry in southern Cameroon. Agroforestry, which combines forestry and the production of agricultural crops, is beginning to be recognized as a practice that helps to reduce poverty while maintaining the forest environment in tropical countries. In such a discussion, cacao production in southern Cameroon has been evaluated as an ideal situation for cacao agroforestry. The author fears that some research institutes and chocolate industries will attempt to push the system farther into the tropical areas that constitute the cacao production zone. Researchers and the chocolate industry currently focus excessively on the relationship between cacao production and forest conservation, leaving no room to consider other activities and the local context, for example, a region’s history, economy, and politics.<sup>(14)</sup> Thus, the author raises questions relating to the uncritical diffusion of cacao agroforestry to various regions. Can cacao be introduced without the supportive cluster of other activities? How can the local people procure labor in sparsely populated areas such as the research area? Does the establishment of cacao fields facilitate forest preservation even if outsiders to the region and the government may significantly affect land

use? To answer these questions, more research is needed to consider other activities associated with cacao production. For example, Sakanashi (2010) investigated how the Fang obtained labor through other combined activities during the cacao harvest season in southern Cameroon.

This study shows that the cacao field is supported by other activities. Therefore, a wider framework is needed in order to comprehensively understand cacao production in the area. This study provides a broader perspective showing that the local cultivators use land not only for agriculture but also for other activities, and how land use is influenced by the local context.

#### NOTE

- (1) England (1993) showed that deforestation was caused by the expansion of cacao cultivation in western Ghana. The shortage of forest has encouraged some farmers to encroach into some forest reserves. Reportedly 50%–70% of forest reserves have been destroyed. Ruf (1995) referred to deforestation in Côte d'Ivoire.
- (2) The International Institute of Tropical Agriculture (IITA) is Africa's leading research partner in finding solutions for hunger, malnutrition, and poverty (IITA, 2009). IITA is headquartered in Ibadan, Nigeria.
- (3) For example, the British Empire used the Taungya system established by the Karen people of Burma to manage teak plantations (King, 1987). The system spread to other parts of the British colonial Empire, such as South Africa and India.
- (4) The IDRC is a Crown corporation created by the Parliament of Canada in 1970. It is the world's first organization devoted to support research activities as defined by developing countries (IDRC, 2010).
- (5) The ICRAF was renamed the World Agroforestry Centre in 2002. The organization's web site explains that the new name reflected the recognition the Centre gained as the international leader in agroforestry research and development. Online. <http://www.worldagroforestrycentre.org/> (Accessed February 10, 2011).
- (6) Bantu farmers, Fang, and Bulu, and Beti tribesmen inhabit the Southern Province (Abomo-Maurin, 2007). The Baka hunter-gatherers, who live adjacent to the Fang villages, also inhabit the research area. Most Fang inhabit southern Cameroon, Equatorial Guinea, and northern Gabon (Alexandre & Binet, 1958). The Baka inhabit the region from eastern to southern Cameroon and northern Gabon (Ichikawa, 2002).
- (7) The minimum unit of production and consumption is for that of a household consisting of husband, wife, and unmarried children.
- (8) For example, the population in one Fang village fell from 52 to 28 people after August.
- (9) Ruf & Schroth (2004) noted 37 species/ha in Côte d'Ivoire. Thus, there are twice as many species per ha in southern Cameroon.
- (10) Diaw (1997) summarized the customary land use by the local people in southern Cameroon, the Bulu and the Fang. It corresponds roughly to that in the research area.
- (11) One liter of palm wine provides approximately 300 calories, 0.5–2.0 g of protein, and considerable amounts of vitamins (Uraih et al., 1985).
- (12) The population density is 8.64/km<sup>2</sup> in Dja et Lobo Division, South Province (Ministry of Economy and Finances, Republic of Cameroon, 2001).
- (13) Many articles about the prospective route between Ketta, Republic of Congo, and Djoum, Cameroon, are available on the Internet. For example, the African Development Bank Group's web site introduces the plan. Online. <http://www.afdb.org/en/projects->

- operations/project-portfolio/project/p-z1-db0-048/ (Accessed February 10, 2011).
- (14) Studies related to agroforestry factor in not only the ecological aspects but also the economic aspects. The use of non-timber forest products and the alleviation of CO<sub>2</sub> emissions in tropical forest areas are being re-evaluated in terms of their expected contribution to conserving the forest and reducing the effects of greenhouse gases (Leakey & Simons, 1997; Gockowski & Dury, 1999).

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————— Accepted *June 1, 2011*

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